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Pledge

I have neither given nor received help on this exam, nor have I seen anyone else do so.

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Signature

Social Security #:_____

Department #: _____

First Letter Last Name _____

Undergrad. Grad. Cont. Ed.

EPID 160
Final Examination
Spring 1993

There are 45 questions on this exam. **Answer only 40 questions!** The first 40 questions will be graded even if all questions are answered. You will not receive extra credit for doing all the questions. For each question that you do answer, please completely fill in the circle for the single best answer. For those questions you do not answer, please draw a single line through the entire answer row.

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1.) The temporal relationship of exposure and disease can be assessed best by which of the following designs?

a. cross-sectional

b. cohort

c. case-control

d. ecologic

2.) In a clinical trial, when the physician knows the treatment each patient receives, but the patients themselves do not know the treatment, the study design is:

a. non-blinded (not masked)

b. single blinded (masked)

c. double blinded (masked)

d. triple blinded (masked)

3.) If a screening test has a sensitivity of 70% and a specificity of 90%. Then:

a. 90% of the people who did not have the disease tested negative on the screening test.

b. 10% of the people with the disease were missed by the screening test.

c. 70% of the people who did not have the disease tested negative on the screening test.

d. 30% of people without the disease tested negative on the screening test.

For questions 4-6: The following table shows the annual diabetes death rates per 1000 for white males and females aged 60, classified by degree of obesity. The rates for the females are not filled in.

	Overweight	Normal weight	Underweight
Males	65	50	40
Females	?	?	?

4.) Which of the following set of rates would be appropriate if for females obesity was associated with the death rate but gender was not? (Circle letter of correct row).

a. 165 150 140

b. 15 10 5

c. 65 50 40

d. 30 40 65

5.) Which of the following set of rates would be appropriate if males had a higher death rate than females independent of weight?

a. 35 55 75

b. 35 25 20

c. 65 50 40

d. 165 150 140

6.) Which of the following set of rates would be appropriate if the trend for female mortality was going in the opposite direction of the male mortality trend?

a. 165 150 140

b. 65 50 40

c. 40 50 65

d. 65 45 50

7.) In the direct age-adjustment procedure

a. the rate in the study population is applied to the standard population

b. the rate in the standard population is applied to the study population

c. the crude rate is applied to the study population

d. the crude rate is applied to the standard population

8-9). A case-control study was conducted to determine the relationship between heart disease and exercise. The analyses were performed separately for 2 age groups as shown in Tables 1 and 2.

Table 1: Number of Men by Age Group 35-44

	Sedentary	Active	Total
Heart Disease	31	19	50
Control	12	38	50
Total	43	57	100

8). Based on the information in Table 1, the investigators concluded that for the men aged 35-44 there was an association between sedentary lifestyle and heart disease because the majority of the patients with heart disease were sedentary.

a. Agree with the investigators' conclusion because they observed an OR=5.2.

b. Agree with the investigators' conclusion because they observed an RR=5.2.

c. Agree with the investigators' conclusion because they observed an OR=2.6.

d. Agree with the investigators' conclusion because they observed an RR=2.6.

Table 2: Number of Men by Age Group 45-54

	Sedentary	Active	Total
Heart Disease	30	70	100
Control	40	160	200
Total	70	230	300

9). The authors concluded that an active lifestyle increased risk of heart disease in men aged 45-54.

a. Disagree with the investigators' conclusion because they made the appropriate comparisons.

b. Agree with the investigators' conclusions because they made the appropriate comparisons.

c. Agree with the investigators' conclusions because the effect measure was greater than unity (1.00).

d. Disagree with the investigators' conclusions because they did not make the appropriate comparisons.

10.) The strongest study design for inferring causality is:

a. clinical trial

b. cross-sectional

c. cohort

d. case-control

11). Choose the most appropriate study design: a study of school children conducted in order to determine whether a high absenteeism rate led to poor grades or whether poor grades led to high absenteeism.

a. a case control

b. a cohort

12.) The term Risk Factor is best applied to:

a. a characteristic identified by means of risk assessment;

b. a characteristic of individuals who manifest a disease;

c. a characteristic of individuals who live in high risk areas.

d. a characteristic associated with a greater likelihood of disease;

13). Choose the most appropriate study design for a disease with a latency of 20 years.

a. a case control

b. a cohort

For questions 14-17: In a study of **9000** men, **6000** were exposed to air pollution and **3000** were not. **100** cases of chronic bronchitis were discovered, **60** among those exposed to air pollution. Examinations during the next 5 years revealed 74 new cases of chronic bronchitis, with 8 new cases among those not exposed to air pollution. **For each answer write the numerator and denominator for each calculation. DO NOT CALCULATE!!!!!!!!!!!!!!!!!**

14.) The prevalence rate of chronic bronchitis among those exposed to air pollution.

15.) The prevalence rate of chronic bronchitis among those not exposed to air pollution.

16). The incidence rate of chronic bronchitis during the next 5 years among those exposed to air pollution.

17). The incidence rate of chronic bronchitis during the next 5 years in the cohort.

18). Which of the following is necessary for a study factor to be considered a confounder:

a. equal distribution of the study factor among exposed and non-exposed

b. the study factor is a behavioral trait

c. the study factor has been measured

d. the study factor is an independent risk factor for disease

19.) In the continuing controversy over the role of cigarette smoking as a cause of lung cancer, an investigator has made the following statement.

> "There are certain well known data which refute the hypothesis that cigarette smoking is a cause of lung cancer. For example in Great Britain the per capita consumption of cigarettes is half as much as in the United States, but the incidence of lung cancer is twice as much. In Australia the per capita consumption of cigarettes is about the same as in Great Britain, yet Australians have half as much lung cancer. In Holland the per capita consumption of cigarettes is lower than the United States but there is 33% more lung cancer."

What reasoning would lead you to agree or disagree with the investigator that these data refute the hypothesis that cigarette smoking causes lung cancer? (Check the <u>one best</u> answer.)

a. Disagree with the investigator because the populations of the countries mentioned vary so much in size.

b. Agree with the investigator but <u>only</u> if there was good evidence that there was no bias in the diagnosis of lung cancer (i.e., if the criteria for diagnosing lung cancer were the same in each country)

c. Disagree with the investigator because this is an example of the ecological fallacy.

d. Disagree with the investigator because he is basing his comparisons on numerator data only.

20). On average, how long is the estimated latent period for AIDS in adults (time from infection with HIV until the development of AIDS)?

a. 2-6 months

b. 2 years

c. 10 years

d. 25 years

21). According to the Centers for Disease Control (CDC), what region reports the fastest growth in number of AIDS cases among heterosexually-oriented people?

a. the North Eastern region

b. the Western region

c. the Southern region

d. the Midwestern region

22). Which of the following statements is **FALSE**?

a. Casual contact is the most rapidly growing mode of transmission of HIV in this country.

b. Since the epidemic began in the USA there have been over 200,000 cases of AIDS reported to the CDC.

c. In the USA it is estimated that over 1 million people are infected with HIV.

d. AIDS and HIV affect African Americans and Hispanic Americans proportionately greater than their representation in the US population.

23). Present epidemiologic research indicates that breast cancer in premenopausal women may be different from that in postmenopausal women. Which of the following does **not** increase risk in postmenopausal women?

a. obesity

b. higher age

c. increased parity

d. large quantities of alcohol consumption

24). Interviews or questionnaires are often used to gain information about risk factors or exposures in epidemiologic studies of breast cancer. Problems associated with these data collection methods are:

a. selection bias

b. recall bias

c. Berkson's bias

d. detection bias (diagnostic bias)

25). In order to carry out an intervention program to reduce levels of a risk factor in the population, it is best to have:

a. Evidence from cohort studies that the risk factor is antecedent to the disease;

b. Replication from a large set of case-control studies showing that odds ratios of the risk factor-disease associations are of large magnitude;

c. evidence from animal studies that reduction of the risk factor prevents the occurrence of disease;

d. evidence from human experimental studies that reduction of the risk factor is effective in reducing the disease.

For question 26: Recent studies have shown an association between reserpine (a drug used to lower blood pressure) and breast cancer in women. It is known, however, that obesity is associated with both breast cancer and hypertension. There is a suspicion that the association between reserpine and breast cancer may be a secondary one. Assume that a cohort study had been conducted to resolve this question and the following data (all of which were statistically significant) were presented:

Annual age-adjusted female breast cancer incidence (per 100,000) by body weight and reserpine status

Body weight	Taking reserpine	Not taking reserpine
Obese	12.50	8.30
Not obese	6.40	4.10

26). Which of the following is true?

a. Both reserpine and obesity are associated with breast cancer.

b. Reserpine is associated with breast cancer but obesity is not.

c. Obesity is associated with breast cancer but reserpine is not.

d. More obese women are taking reserpine than are non-obese.

27). The population attributable risk of strokes associated with the level of elevated blood pressure:

a. remains constant across levels of elevated blood pressure; i.e. is the same for "mild" and "severe" hypertension.

b. decreases with increasing levels of elevated diastolic blood pressure; i.e., is less for "severe" than "mild" diastolic hypertension.

c. increases with increasing levels of elevated diastolic blood pressure; i.e., is less for "mild" than "severe" diastolic hypertension.

d. increases with increasing levels of elevated systolic blood pressure; i.e., is less for "mild" than "severe" systolic hypertension.

28). The relative risk for stroke associated with the level of elevated blood pressure compared with non-elevated blood pressure:

a. remains constant across levels of elevated blood pressure; i.e. is the same for "mild" and "severe" hypertension.

b. decreases with increasing levels of elevated diastolic blood pressure; i.e., is less for "severe" than "mild" diastolic hypertension.

c. decreases with increasing levels of elevated systolic blood pressure; i.e., is less for "severe" than "mild" systolic hypertension.

d. increases with increasing levels of elevated diastolic blood pressure; i.e. is less for "mild" than "severe" diastolic hypertension.

29). At present, deaths attributed to coronary heart disease are:

a. The main cause of death in men aged 45 and older, but not in women of this age group;

b. The main cause of death in women aged 45 years and older, but not in men of this age group;

c. The main cause of death in both men and women aged 45 years and older;

d. The main cause of death for men and women in any age group.

30). Epidemiologic studies have demonstrated that total blood cholesterol is a risk factor for coronary heart disease in:

a. animals, but evidence for humans is not convincing;

b. men, but evidence for women is not convincing;

c. men, as well as in women;

d. men, as well as in women, but evidence for those with additional risk factors is not convincing.

31). For a particular county, all mothers giving birth to their first child during a particular year were classified by place of residence (urban or rural) and by social class. The mean birthweights of the babies were tabulated as follows:

Mean Birthweights in Grams by mothers' Place of Residence and Social Class

Social Class		Place of Residence	
	Rural	Urban	All Places
Low	3300	3309	3303
High	3672	3669	3671
All Classes	3364	3592	3475

If these data were available and a new investigation was being planned to search for the causes of low birth weight, would it be more logical to start this search:

a. By attempting to identify relevant factors in place of residence.

b. By attempting to identify relevant factors in social class.

c. By attempting to identify the relevant factors that distinguish place of residence and social class.

d. To ignore both place of residence and social class status as neither of these are associated with birth weight.

32). Choose the most appropriate study design for a study in which it was important to quantify the attributable risk of the characteristic

a. a case control

b. a cohort

33). The two main risk factors which are independently associated with non-insulin dependent diabetes mellitus (NIDDM) are:

a. Age and socioeconomic status

b. Age and family history

c. Age and obesity

d. Age and gender

34). The majority of NIDDM health care costs are from:

a. allied health services

b. pharmaceuticals

c. self-management

d. nursing home care

35). If a group of investigators were comparing incidence rates for NIDDM in American blacks and whites and a marked increase was noted for NIDDM diagnosis in American blacks, there may be:

a. a cohort effect

b. recall bias

c. selective survival bias

d. diagnostic bias

36). Which of the following purposes is not included in the role of epidemiology in health services research:

a. evaluation of medical technology

b. the acquisition of resource information for health policy development

c. development of clinical diagnoses

d. evaluation of health care utilization and satisfaction

37). Choose the most appropriate study design for a study concerned with a rare disease.

a. a case control

b. a cohort

38.) What is the major identified cause of lung cancer in the United States?

a. radon

b. tobacco

c. air pollution

d. asbestos

39). Approximately what proportion of lung cancers in the United States are attributable to cigarette smoking?

a. 25%

b. 50%

c. 85%

d. 100%

40.) Which of the following best states the history of lung cancer in the U.S.A. and Great Britain in the 20th century?

a. Lung cancer first emerged in the early decades of the 20th century after the advent of manufactured cigarettes.

b. Lung cancer has been the leading cause of cancer death since early in the present century but has become even more common since the rise in cigarette smoking.

c. Though cigarettes contribute greatly to lung cancer, the disease has not become more common because other causes of lung cancer have been controlled during this century.

d. Now the leading cause of cancer death, lung cancer was very rare at the beginning of this century.

41.) Retrospective studies of lung cancer were criticized for using hospitalized patients. Which of the following statements is correct?

a. Case-control studies always use hospitalized controls.

b. Hospital patients are more likely to be smokers than the general population.

c. Hospitalization is irrelevant in epidemiologic studies.

d. Hospitalized cases are, in general, preferable for etiologic research.

42.) Early retrospective studies of lung cancer and tobacco were also criticized for relying on recall data. Which of the following statements about recall is most correct?

a. If people with lung cancer are better able to recall that they smoked than people without lung cancer, then the association observed in a **cohort** study of smoking and lung cancer will appear **stronger**.

b. If people with lung cancer are better able to recall that they smoked than people without lung cancer, then the association observed in a **case-control** study of smoking and lung cancer will appear **weaker**.

c. If people with lung cancer are better able to recall that they smoked than people without lung cancer, then the association observed in a **case-control** study of smoking and lung cancer will appear **stronger**.

d. If people with lung cancer are better able to recall that they smoked than people without lung cancer, then the association observed in a **cohort** study of smoking and lung cancer will appear **weaker**.

43). Which of the following statements about the factors related to the prevalence of depression is not true:

a. rates are higher for females than males

b. rates are higher for low SES than high SES

c. rates are higher for single people than married people

d. rates are higher for American blacks than American whites after correcting for social class differences

44). In occupational cohort studies, the all-cause SMR value is frequently less than expected, i.e., SMR=85. Which of the following is the best interpretation?

a. This low value can be attributed to sampling variability, that is, can be due to "chance".

b. The above statement is false, an all-cause SMR value for an occupational cohort study is never less than 100.

c. The value is low because employed people's job protects them against adverse health.

d. The value is low because workers often show favorable mortality when compared with the national population, i.e., the "healthy worker effect".

45). The reduction of bias in a study is important because:

a. measure precision will improve

b. a less costly and time consuming study will result

c. the study's results are more likely to represent the true exposure-disease relationship

d. there are theoretical limitations in the validity of the odds ratio